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ABSTRACT

The study was designed to determine the variables which may be strong indicators of possible failure or difficulty on the minimum competency test (MCT) for 88 handicapped seniors (learning disabled, mildly retarded, and emotionally disturbed). Fifty-six Ss had not successfully passed the MCT prior to their senior year, while the comparison group consisted of 32 handicapped students who had been successful prior to their senior year. Ss were administered a battery of tests to determine eligibility or whether special education services should be continued. Findings revealed that sex was a significant factor in determining success while race was not a significant factor. Further, data revealed significant relationships between verbal, performance, and full scale IQs as related to minimum competency reading and mathematics results when treatment and comparison groups were combined. Recommendations are made for further research. (CL)

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# Handicapped Students' Performance on the Virginia Minimum Competency Test

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## Section One

## Introduction

In recent years, pressures have been brought from all sectors in response to parents' concern over their children's progress in the basics. State legislatures, state boards of education, and local school districts have responded with accountability laws and educational policy for the purpose of restoring confidence in the public schools.

One response to this is the introduction of minimum competency testing in which the awarding of the standard high school diploma is tied to a passing grade on a competency test. This has resulted in a diverse assortment of practices and policies for the handicapped student taking the minimum competency test. In some instances, they are exempted from taking the test. However, this may mean that they are not eligible for a standard high school diploma. In other instances, they are required to take the examination and various or no accommodations are made for certain handicapping conditions when the test is administered.

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In addition to these problems, concern about adequate preliminary and preventive measures in preparation for the competency examination is being raised. Educators generally agree that the crucial time for teaching, learning, and remedying basic skills is in the early years of schooling (McClung, 1979). Lewis (1979) addresses the concern of the timing of the adoption of proficiency standards in reference to the efficacy of remedial instruction. In this respect, he questions the feasibility of a student's mastering necessary skills as late as his or her eleventh grade year. Furthermore, he feels it is unreasonable to expect the failing high school senior to elect to remain in school another year -- if he is in fact permitted to do so -- simply for a second chance at the test.

In the September/October 1978 article "Impact of Minimum Competency Testing in Florida," in Today's Education, a similar point of concern was emphasized:

> The critical issue is whether short-term remediation programs can be effective in providing to those poor and black children knowledge and skills which the schools have not been successful in imparting over the last eleven years.

Besides the concern over the timing of remediation, there is also concern about the effectiveness of remedial education. Archambault (1979) contends that too little attention has been paid to and perhaps too little known about effective means of

remediating the learning problems of students failing the competency examinations. He then concludes that in the absence of adequate research and of well designed programs developed by the state educational agencies, remedial programs will resemble strategies in existence prior to minimum competency testing, particularly in those districts where resources and planning capabilities are limited.

Archambault (1979) states that current or pending regulations in only eight states (California, Colorado, Georgia, Nebraska, New Jersey, Oregon, Pennsylvania, and Virginia) suggest that some kind of instructional experiences need to be provided students to facilitate their attaining desired outcomes. He argues further that in most cases the policy language of these regulations merely asserts that instructional support should accompany educational demands, while saying little about the actual programs needed.

Cable (1981) concludes from her study, which focused on self-contained learning disability students in high schools, that the first concern and major emphasis for remediation should be reading. This will then enable the student to benefit from courses such as English, social studies, and science when their basic reading problems have been solved.

Ezell (1979) presents a different perspective based on her study involving the mildly retarded. She concluded that

the formats of the state and school system's minimum competency test (in which she conducted her study) reflected the various curriculum studies offered all general education students. This was in contrast to the school curriculum for the mildly retarded which emphasized the application of basic academic skills to adult-oriented consumer awareness problems. She concluded that in such situations, the mildly retarded students who are enrolled in special education classes are effectively precluded from successful completion of high school and the receipt of a diploma because they do not follow the general education curriculum.

## Purpose of the Study

The purpose of this study is to examine and determine those variables which may be strong indicators of possible failure or difficulty on the Virginia Minimum Competency Test for those handicapped students who are pursuing a regular diploma. This information may result in the early identification of those students who might need greater assistance, remediation, and special programs. Such early identification and remediation should reduce the number of handicapped student failures.

## Significance of the Study

By examining certain variables, this study should have accomplished the following:

1. Identified preliminary measures which can be taken to reduce or eliminate the number of handicapped students who fail the minimum competency examination while in pursuit of a regular diploma.
2. Provided public school systems with needed research pertaining to minimum competency testing.
3. Helped school administrators to develop new or revised curricula for certain handicapped students.
4. Assisted school administrators in determining non-discriminatory testing conditions relating to certain handicapped students.
5. Assisted school administrators in being knowledgeable when implementing or revising policies pertaining to minimum competency testing.
6. Increased school administrators' awareness of teacher training needs in remediation techniques.
7. Assisted school administrators in developing profiles of handicapped students who fail the minimum competency test.

## Limitations of the Study

This study was limited to the target population of handicapped seniors who were seeking a regular high school diploma in a large public school system during the 1981-1982 and 1982-1983 school years.

Section Two

## Research Design and Methodology

The following procedures were used in conducting this study:

1. Identify those handicapped seniors who failed the minimum competency test in October of 1981 or 1982, and among them those who were still unsuccessful in March of 1982 or 1983, and the remaining of the original cases who continued to be unsuccessful in their May 1982 or 1983 attempt to pass the competency test.
2. Matching these students to those handicapped seniors who passed the minimum competency test prior to their senior years.
3. Obtain the following information from each student's eligibility file:
   - Most recent standardized achievement test score (on the Woodcock-Johnson Psycho-Educational Battery or the Wide Range Achievement Test) in reading and mathematics.
   - Most recent Verbal, Performance, and Full Scale IQs.
   - Number of years enrolled in special education programs in Fairfax County Public Schools.
   - Number of years enrolled in special education programs in other school districts.

- Type of special education program received.
- Number of days attended high school prior to passing the minimum competency test, and through their senior years.
- Race.
- Sex.

A control-treatment research design was used to test the hypotheses included in this study. A description of the major statistical analyses used is as follows:

Correlations and T-Tests

In order to determine if interval data, such as achievement and minimum competency test scores, were significantly related to each other, it was necessary to utilize Pearson Correlation Techniques.

Analysis of Variance

This statistical method was used to measure whether sex by group (treatment versus comparison) interactions occurred on the Verbal, Performance, and Full Scale IQs.

Regression Analysis

In order to determine which background variables were the best indicators of students' minimum competency test performance, it was necessary to use stepwise regression

models. These models demonstrated which independent variables predicted the greatest amount of variation in minimum competency reading and mathematics scores.

## Sample Selection

The subjects identified for the study were 88 handicapped students who were scheduled to graduate at the end of their senior year. The treatment group was comprised of 56 students (33 males and 23 females) who had not successfully passed the minimum competency test prior to their senior year, while the comparison group consisted of 33 (26 males and 6 females) handicapped students who had been successful prior to their senior year. All subjects were handicapped students participating in a learning disabilities self-contained program, a mildly mentally retarded program, or in a program for the emotionally disturbed. Since all students were handicapped, each one was administered a battery of tests to determine eligibility or whether special education services should be continued. The major components of this battery of tests were the Wechsler Intelligence Scale for Children or the Wechsler Adult Intelligence Scale (depending on the subjects' ages), and the Woodcock-Johnson Psycho-Educational Battery, and the Wide Range Achievement Test.

## Section Three

## Findings

As a part of the output from the Statistical Package for the Social Studies (SPSS) analysis, a description of the samples is provided. In addition, test performance data for the two groups are presented. Tables 1 and 2, therefore, show the descriptive analysis of the independent variables for the treatment and comparison groups prior to any inferential statistical analysis of the data.

Table 1 shows a comparison of means and standard deviations of the following variables: sex; length of time in a program; Verbal, Performance, and Full Scale IQs; reading and mathematics achievement levels; and sophomore, junior, and senior days absent. The means of those variables pertaining to achievement test results were less for the treatment group in all testing categories. The means of those variables pertaining to reading and mathematics achievement, and Verbal, Performance, and Full Scale IQs were significantly greater for the comparison group. In contrast, the average number of years in special education was significantly higher in the treatment than comparison group.

In Table 2, means and standard deviations for the treatment and comparison groups' combined Verbal,

Table 1

Treatment and Comparison Groups

Test Results and Attendance Data

| | Treatment Group (N=56) | | | Comparison Group (N=32) | | |
|---|---|---|---|---|---|---|
| | Males (N=33) Females (N=23) | | | Males (N=26) Females (N=6) | | |
| | N | Mean | SD | N | Mean | SD |
| **SOPHOMORE** | | | | | | |
| MCT Reading | 44 | 59.3 | 5.5 | 24 | 72.3 | 5.6 |
| MCT Mathematics | 36 | 60.3 | 8.0 | 27 | 74.1 | 6.3 |
| **JUNIOR** | | | | | | |
| MCT Reading | 50 | 60.4 | 7.4 | 13 | 79.4 | 6.1 |
| MCT Mathematics | 43 | 62.2 | 10.0 | 10 | 76.9 | 5.9 |
| **SENIOR** | | | | | | |
| MCT Reading (1st Testing) | 49 | 63.5 | 5.8 | - | *** | *** |
| MCT Mathematics (1st Testing) | 38 | 65.0 | 4.7 | - | *** | *** |
| MCT Reading (2nd Testing) | 44 | 69.1 | 8.3 | - | *** | *** |
| MCT Mathematics (2nd Testing) | 33 | 64.8 | 6.5 | - | *** | *** |
| MCT Reading (3rd Testing) | 14 | 62.8 | 7.2 | - | *** | *** |
| MCT Mathematics (3rd Testing) | 18 | 63.3 | 7.3 | - | *** | *** |
| Highest Reading Score | 56 | 70.7 | 7.4 | - | ** | ** |
| Highest Mathematics Score | 56 | 69.6 | 6.4 | - | ** | ** |
| Reading Achievement | 56 | 73.8 * | 9.6 | 32 | 84.7 * | 15.9 |
| Mathematics Achievement | 56 | 71.6 * | 7.5 | 32 | 82.5 * | 11.5 |
| Verbal IQ | 56 | 73.6 * | 11.7 | 32 | 91.9 * | 11.0 |
| Performance IQ | 56 | 78.5 * | 15.4 | 32 | 97.2 * | 11.7 |
| Full-Scale IQ | 56 | 74.2 * | 13.3 | 32 | 93.7 * | 10.1 |
| Years in Special Education | 56 | 8.4 * | 2.8 | 32 | 7.2 * | 4.5 |
| Sophomore Days Absent | 47 | 16.7 | 12.4 | 22 | 17.2 | 14.5 |
| Junior Days Absent | 47 | 22.1 | 18.7 | 20 | 18.5 | 15.5 |
| Senior Days Absent | 53 | 22.7 | 17.5 | 22 | 19.8 | 16.3 |

*Significant difference between treatment and comparison groups by t-tests at $p < .05$.

**Highest Minimum Competency Test Score averages only calculated on the treatment group results.

***Minimum Competency Test successfully passed by this testing period.

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Table 2

Average IQs During Each Minimum Competency Testing Period

| | | Verbal IQ | | Performance IQ | | Full Scale IQ | |
|---|---|---|---|---|---|---|---|
| | | M | SD | M | SD | M | SD |
| **Reading** | | | | | | | |
| Sophomore Year | N=68 | 79.13 | 13.91 | 84.28 | 16.98 | 80.12 | 15.06 |
| Junior Year | N=63 | 77.13 | 14.47 | 82.40 | 16.70 | 78.24 | 15.56 |
| Senior Year (1st Testing) | N=49 | 74.00 | 11.21 | 80.02 | 15.48 | 75.14 | 13.04 |
| Senior Year (2nd Testing) | N=44 | 73.80 | 12.04 | 79.98 | 16.03 | 74.84 | 13.72 |
| Senior Year (3rd Testing) | N=14 | 66.07 | 15.24 | 61.71 | 17.93 | 64.71 | 17.38 |
| **Mathematics** | | | | | | | |
| Sophomore Year | N=63 | 80.64 | 13.72 | 86.03 | 16.36 | 81.91 | 14.70 |
| Junior Year | N=53 | 76.72 | 14.18 | 79.34 | 16.50 | 76.53 | 15.36 |
| Senior Year (1st Testing) | N=38 | 73.00 | 12.48 | 76.42 | 16.10 | 72.76 | 14.09 |
| Senior Year (2nd Testing) | N=33 | 71.76 | 12.57 | 74.97 | 14.74 | 71.42 | 13.47 |
| Senior Year (3rd Testing) | N=18 | 66.50 | 11.78 | 71.94 | 16.89 | 66.83 | 14.67 |

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Performance, and Full Scale IQs are provided for each of the minimum competency testing periods. This table indicates a general decline in reading and mathematics scores from the sophomore to senior year. Thus, the students who have lower IQs take longer to pass these tests.

For the purposes of this study, the researcher investigated the influence of several variables upon handicapped students' performance on the Virginia Minimum Competency Test. The following findings emerged from the statistical treatment of the collected data and are reported here, consistent with the previously stated hypotheses.

Sex

Sex was found to be a significant factor in determining success on the Virginia Minimum Competency Test. A significant disparity existed between handicapped males and females who failed the Virginia Minimum Competency Test. Female handicapped students failed with greater frequencies. These findings are in contrast to a dissertation study conducted by Wilson (1982) on non-handicapped students. The results of his study showed non-handicapped males to be more likely to fail the Virginia Minimum Competency Test. However, in a recent study by Drs. David and Myra Sadker (1983), it was concluded that beginning with nursery school, through the

early grades and beyond, teachers unwittingly favor male students over female students. This researcher concludes that in reference to the handicapped population, the handicapped female, classified as mildly mentally retarded, should be a greater focus of concern not only in respect to remediation but in other training due to these findings.

Race

The findings of this study reveal that there were no significant differences between black and white handicapped students in their performance on the minimum competency tests. These findings are different from those by Wilson (1982) and Serow and Davies (1982) on non-handicapped students.

Wilson, in a study involving non-handicapped students, concluded that black students and non-black students passed the Virginia Minimum Competency Test with only a slight disparity from the expected frequency. It was found that among the students who failed the Virginia Minimum Competency Test, the observed frequency for the black students was greater than the observed frequency for the non-black students.

The findings by Serow and Davies (1982), involving non-handicapped students on the North Carolina Minimum

Competency Test, indicated that test failures occurred disproportionately among blacks. Serow and Davies also concluded that several factors were considered as possible factors contributing to this. These factors were inadequate resource availability, inadequate resource effectiveness, and lack of motivation.

Though no significant differences were found in this researcher's study, further research or an examination of the manner in which resources are allocated within a district or a state are warranted. In addition, should motivation be a factor in successfully passing the minimum competency tests, counseling services should be considered as a viable means for assisting unmotivated students.

IQ Test Results

The findings of this study reveal significant relationships between Verbal, Performance, and Full Scale IQs as related to minimum competency reading and mathematics results when treatment and comparison groups were combined. All correlations were significantly positive during the sophomore, junior, and senior years except for senior reading -- 1st testing and senior mathematics -- 3rd testing. However, no explanation can be made of the latter results.

On the stepwise regression technique, each of the IQ score types indicated the following:

Verbal IQ. Verbal IQ was a strong predictor on the sophomore reading minimum competency test (RSQ = .42), whereas on the junior and senior (1st testing) reading minimum competency tests its value as a predictor was low (junior RSQ = .01; senior [1st testing] RSQ = .01).

On the mathematics minimum competency tests, Verbal IQ was a moderate predictor on the senior (1st testing) mathematics test (RSQ = .24) but a weak predictor on the junior and sophomore minimum competency test (junior RSQ = .01; sophomore RSQ = .01).

Performance IQ. Performance IQ proved to be a weak indicator on all the reading minimum competency tests (sophomore reading RSQ = .00; junior reading RSQ = .01; senior reading [1st testing] RSQ = .00).

On the mathematics minimum competency tests, performance IQ was a relatively strong predictor for the sophomore mathematics minimum competency test (RSQ = .51) but had no relevance as a predictor on the junior and senior minimum competency tests (junior mathematics PSQ = .01; senior mathematics [1st testing] RSQ = .01).

Full Scale IQ. Full Scale IQ was a moderate predictor on the junior reading minimum competency test (RSQ = .41); however, it had no prediction value on the sophomore and

senior (1st testing) tests (sophomore reading RSQ = .00; senior reading [1st testing] RSQ = .12).

On the junior mathematics minimum competency tests, Full Scale IQ served as a moderate predictor (RSQ = .34), whereas on the sophomore and senior mathematics testing, it had minimum predictive ability (sophomore mathematics RSQ = .00, and senior mathematics [1st testing] RSQ = .01).

## Correlations between Achievement Test Scores and Minimum Competency Test Performance

Statistically significant and positive correlations were found between reading and mathematics standardized test scores and performance on the respective minimum competency test scores except during senior (2nd testing) reading results and senior (3rd testing) reading and mathematics results. These exceptions may be attributed to the low ability levels and lack of variation in achievement test scores of those students who had not passed the test as of the second and third testings during their senior year.

## Reading Achievement Standardized Test Scores: Regression Analysis

The reading achievement standardized scores were low predictors of success on the minimum competency sophomore, junior, and senior reading tests (Sophomore RSQ = .11; junior RSQ = .07; senior [1st testing] RSQ = .06). However,

the results should be cautiously interpreted concerning the predictive value of reading achievement scores in regard to performance on the reading minimum competency test. This caution is urged, since after the sophomore minimum competency reading test, students may request that the test be read to them in the future. In essence, by allowing this accommodation accurate predictive ability diminishes. (This form of modification would be noted on their transcripts.)

Mathematics Achievement Standardized Test Scores: Regression Analysis

Mathematics achievement standardized scores were found to be low predictors on the sophomore (RSQ = .07), junior (RSQ = .05), and senior (1st testing) (RSQ = .02) mathematics minimum competency test performance.

Years in Special Education: Regression Analysis

Based on the statistical tests using both groups combined as well as individual handicapped groups, the comparisons of minimum competency test performance with the total number of years enrolled in special education programs indicated that the correlations were significant and negative. However, further analysis of the mildly mentally retarded group led this researcher to conclude that the negative correlations were caused by the mildly mentally retarded

group performing below the other groups and receiving special education services for the longest period of time.

Further statistical analysis indicated that the number of years a student is in special education served as a low predictor of performance on the senior reading minimum competency test (RSQ = .11).

High School Attendance:
Regression Analysis

The findings of the study reveal that only two out of ten predictors were found to be significantly correlated with high school attendance for each school year and the respective tests taken that year. This occurred on the junior mathematics and senior reading tests. However, further analysis of attendance through stepwise regression indicated that the only year in which the student's attendance had a bearing on his or her performance on a minimum competency test for that specific year was on senior reading. Nevertheless, the RSQ for this predictor was very small (RSQ = .06).

## Section Four

## Summary and Conclusions

Based on the findings of the present study, it is recommended that:

1. More extensive research be conducted on remediation techniques which are effective with students deficient in specific areas.

2. More extensive research be conducted on teacher training and in-service needs for those teaching the handicapped high school student.

3. A study be conducted determining which areas or questions on the reading and mathematics minimum competency tests present the greatest difficulty for handicapped students so as to focus remediation on these areas earlier and more extensively.

4. The study should be replicated in future graduating classes to add support or lead to further investigation of issues involved.

5. A similar study should be conducted at the junior high and elementary levels. This study would probably encourage remediation to begin prior to the high school level for those areas identified as needing intensive remediation.

6. Consideration be given to the merits of listing a student's scores and other pertinent educational data on the diploma instead of offering an assortment of diplomas.

7. If current policies stand for awarding diplomas, provide an optional curriculum or competency examination for mildly mentally retarded students which is more representative of their needs and abilities.

8. Additional research be conducted to determine and more accurately define basic skills.

9. Additional research be conducted examining other variables which may predispose or deter a student from successfully passing the minimum competency tests (e.g., number of parents in the home, income level, home environment, health problems, and birth difficulties).

This study was not intended to be an evaluation or rating of a school system's programs. Nor is the study designed to measure the success or failure of a school system's programs for the handicapped. The researcher acknowledges that the minimum competency testing movement is but a part of an effort to improve the current education system in the United States. A major goal of minimum

competency testing is to raise levels of basic skills among students at the lower end of the achievement spectrum.

The intentions of minimum competency testing are laudible; however, from this researcher's viewpoint such a goal leaves one skeptical when considering the feasibility of institutionalizing this type of testing in an equitable way, considering the unavailability of resources in some districts and states, low funding levels, and the achievement potential of some individuals involved. In addition, one cannot but react with apprehension when one realizes the expectations society has placed on the schools in the past when the solution could not be achieved elsewhere.

Furthermore, in the zeal and urgency of the minimum competency testing movement, there is missing the realization that many educational gains made by handicapped students could be threatened, delayed, or negated. This possibility exists and can be perpetuated unless state and local educational policies in this area are formulated to resolve the inconsistencies and potentially discriminatory practices which currently exist in some situations.

In essence, there is a need to review standing regulations, policies, and practices in the various states and school districts as they pertain to minimum competency testing and to pursue further research -- especially as it affects the handicapped student. It is hoped this study contributes to this need.

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